

## ABSTRACT

5 A liquid crystal shutter comprises a liquid crystal device  
including a nematic liquid crystal sealed in between a first transparent  
substrate and a second transparent substrate on whose inner surfaces are  
formed respective transparent electrodes, the liquid crystal device having  
a twisted angle equal to or greater than  $180^\circ$ ; and a pair of polarizing  
plates between which are sandwiched the first transparent substrate and  
10 the second transparent substrate, the polarizing films having respective  
absorption axes (13, 14) which are substantially orthogonal to each other,  
the absorption axes (13, 14) of the polarizing films being angled within a  
range of  $\pm 40^\circ$  to  $\pm 50^\circ$  relative to a direction (12) in which intermediate  
liquid crystal molecules are orientated, the direction indicating a  
15 direction of orientation of the liquid crystal in the intermediate portion in  
the direction of thickness of the liquid crystal device. Alternatively,  $\Delta n d$   
may lie within a range of 600 to 900 nm,  $\Delta n d$  being the product of a  
birefringence  $\Delta n$  of the nematic liquid crystal and a gap  $d$  between the  
first transparent substrate and a second transparent substrate.

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